

From Rick Larson's website [www.bethlehemstar.net](http://www.bethlehemstar.net)

**THE STAR OF BETHLEHEM FASCINATES.** For millennia, believers, scoffers and the curious have wondered at the Biblical account of the Star. The Bible recounts unusual, or even impossible astronomical events at Christ's birth. For many doubters, the account of the Star is easily dismissed as myth. For many believers, it's a mystery accepted on faith. But what happens if we combine current historical scholarship, astronomical fact and an open mind? Judge for yourself...

### Chapter 1: Setting The Stage Why are we hearing this now?

If the Star was a real historical event, why are we learning of the evidence only now? Why isn't it common knowledge? A few minutes considering these things will intensify your experience and understanding of what you will learn on this site. We'll look at three of the most important factors leading to modern rediscovery of the Star: Johannes Kepler's discovery of how the solar system works, improvements in our knowledge of first century history and the spread of computers.



**Kepler's discovery.** Johannes Kepler (1571-1630) was one of the great mathematical minds of human history. As Arthur Koestler wrote in *The Sleepwalkers*, "Kepler and Galileo were the two giants on whose shoulders Newton stood." A German by birth, Kepler began his professional career in Graz, Austria teaching mathematics. His views in the Protestant/Catholic contest then raging got him banished from Graz after only a few years, but this actually worked for his good.

The reason is that about the time of his ouster, the earnest, middle-class, 28 year-old Kepler had attracted the attention of one Tycho Brahe (1546-1601). Apart from their advanced math skills, the two men had little in common. Brahe was a wealthy, eccentric, aristocratic, overbearing, hard-partying Danish nobleman who served in Prague as Imperial Mathematician. He was also the acknowledged "prince of astronomers" due to the unprecedented accuracy of his vast collection of astronomical observations. And he could be a wildman. When Brahe lost his nose in a college-years duel, he did better than our modern fashion of piercing noses. He had a complete replacement nose molded of gold with silver. This he wore the rest of his life.



Brahe invited the expelled Kepler to Prague to collaborate in study of the solar system, which at the time was still poorly understood. Many still thought of planets as "wandering stars." Both men were brilliant and keen to unravel the mystery of planetary motion, but their temperaments were so different that they mixed about like cats and dogs. The professional relationship was decorated with verbal warfare and walk outs. The personality conflict was heightened by Brahe's intent to remain the top dog astronomer—he would not allow Kepler full access to his library of observations. Instead, he dribbled out the data to maintain personal control. But when Brahe died

suddenly of a urinary tract problem in 1601, Kepler found himself promoted to his master's position. Kepler himself became Imperial Mathematician with full access to Brahe's library. That changed everything.

Kepler set out to prove that the planets travel in perfect circular solar orbits. This presented a kind of mathematical beauty which particularly attracted him. But try as he might, he could not force the mathematics of circular orbits to align with what he saw in the sky each night. And Brahe's meticulous records proved inconsistent with the theory of circles. In an inspirational flash, Kepler saw that the planets might travel in elliptical orbits and finally found the perfect mathematical fit. In 1609, he published the First and Second Laws of Planetary Motion and ten years later, the Third Law. These are still used by astronomers, NASA, the European Space Agency and everyone else studying the stars today. These laws do not change.

With his brand new mathematical tools, Kepler held keys to the heavens and time. He could do things no astronomer had ever done. With enough pens, ink and time he could calculate sky maps showing the exact positions of all of the stars and planets in the night sky. Not just for that evening's observations, but for *any day in history, as viewed from any place on the surface of the Earth*. Being a religious man, Kepler soon set his equations grinding on the mystery of the Star of Bethlehem. It's almost tragic that he didn't find the phenomena discussed on this web site, because he pushed very hard in his search for the Star and even published on the topic. He would have been delighted to see what you will see. But Kepler was working from a flawed understanding of first century history, and that threw him off the track.

So the first piece of the Star puzzle is that, thanks to Kepler, we now have the ability to locate celestial objects with great precision at any point in history and from any viewing point. For example, we can calculate what the sky looked like over Jerusalem 2000 years ago. But that raises the question of *dates*. For what years should we be scanning the sky?

**Dating Christ's birth.** The great majority of ancient chronographers held that Christ was born in 3 or 2 BC, and none held that Jesus was born before 4 BC. The ancients were correct, as we shall see, but by Kepler's day that earlier and better understanding had been laid aside. Kepler and his contemporaries concluded (as have many present day historians) that Christ was born before 4 BC. The reasons for that misunderstanding are complex and fascinating, but a major factor was their interpretation of the writings of the ancient Jewish historian, Flavius Josephus (37 AD-95 AD).

Josephus' life was a wild ride worth a little detour here. (Don't worry, we're getting where we're going). Josephus was born just a few years after Christ's execution. A member of the Jewish Pharisee sect, he rose to political prominence in Judea by the time he was in his late twenties. In 66 AD the Romans, who occupied Judea at that time, were thrown into a war rage by what they saw as growing Jewish arrogance and treachery. Josephus marshaled Jewish forces to defend against an enemy that soon grew to the proportions of a tidal wave. Roman troops, horses and siege engines poured into the region in simply overwhelming numbers.

Resistance proved futile. Josephus and a fighting unit of 40 men were cornered by Roman forces and retreated to a cave where they made a suicide pact to avoid capture. 38 men died in that cave, but Josephus and one other had second thoughts and were taken prisoners. That's a twist, but here's a tighter one: Josephus wound up winning the



favor of Vespasian (9 AD-79 AD), who was then commander of the Roman expedition in Judea. He was drafted into the Roman war effort against his own Jewish people, and ultimately served as the interpreter for Vespasian's son, Titus (39 AD-81 AD). Titus had orders to besiege Jerusalem and destroy the Jewish temple. This he did in 70 AD, in apparent fulfillment of a 500 year-old vision recorded by the Jewish prophet Daniel.

After the war, Josephus could not remain in Judea. He would have been assassinated on sight. So he was taken to live in Rome. There, his attentions appear to have turned to regaining the acceptance of his Jewish countrymen. Perhaps to achieve this reinstatement, he wrote extensive histories of the Jewish people and ancient times. These histories offer important clues in the search for the Star. In one of his works, *Antiquities*, Josephus mentions Jesus, John the Baptist and other New Testament characters, including the murderous King Herod of the *Gospel of Matthew*, Chapter 2.

The Bible recounts that Herod learned of the Messiah's birth from astronomers who had seen the Star of Bethlehem. He tried to kill the child, so, obviously, the Bible records that Herod was alive at Jesus' birth. Remember that this mattered to Kepler, because historians of his time apparently inferred from Josephus' history that Herod died in 4 BC. Necessarily, Kepler assumed Christ was born before that date, perhaps 5 BC or earlier. So, those are the years for which he scanned the skies for the Star. Even with the power of his newly discovered laws of planetary motion, he didn't find the phenomena we will examine here. He searched the skies of the wrong years.

But modern scholarship has deepened our understanding of Josephus' manuscripts. A recent study was made of the earliest manuscripts of Josephus' writings held by the British Library in London, and the American Library of Congress. It revealed a surprise that allows us to target our mathematical telescopes better than could Kepler. It turns out that a copying error was a primary cause of the confusion about the date of Herod's death. A printer typesetting the manuscript of Josephus' *Antiquities* messed up in the year 1544. *Every single Josephus manuscript* in these libraries dating from before 1544 supports the inference that Herod passed in 1 BC. Excellent scholarship confirms that date. Knowing this, and since Herod died shortly after Christ's birth, our investigation turns to the skies of 3 and 2 BC.

So, we have the second factor allowing us to "find" the Star today. We newly know for which years we should examine the skies.

**Computers.** One more factor accounts for your hearing about the Star now instead of long ago: computers. When Kepler calculated a sky map, it was laborious. Plenty of pens and ink. And when the calculations were complete, he had a picture of the sky at a single moment of time. If he had selected the wrong day to search for the Star, he might find nothing. More pens and ink. But Kepler's Laws of Planetary Motion are playthings for a computer. The equations are solved almost instantaneously by modern astronomy software available to anyone for about \$50.

With software which incorporates Kepler's equations, we can create a computer model of the universe. In minutes we can produce thousands of the sky maps which were a great labor before computers. We can animate the universe in real time at any speed we choose, make months pass in moments or wind back the clock. We can view the sky precisely as it *moved* over Jerusalem 2000 years ago.

And when we look up, examining the *correct* years, we find remarkable things.

### ▶ The Stars and the Bible

Even if you are not of a traditional Christian or Jewish faith, you might feel a bit uneasy searching for signs in the stars. Many people have concluded that there isn't anything to astrology—or if there is something to it, it's a "something" they want no part of. So, are we doing astrology here?

A reasonable question with a short answer. No. That's not what we're doing here. Astrology holds that stars exert forces on men. Astrology is a:

**"...form of divination based on the theory that the movement of the celestial bodies—the stars, the planets, the sun and the moon—influence human affairs and determine the course of events."**

By contrast, the Bible refers to the celestial objects as carrying *signs* from the Almighty. But it prohibits worship of what we see above or even holding such things in too high regard. For example, we read in the *Book of Job*, Chapter 31:

**26 if I have regarded the sun in its radiance or the moon moving in splendour, 27 so that my heart was secretly enticed and my hand offered them a kiss of homage, 28 then these also would be sins to be judged, for I would have been unfaithful to God on high.**

The Old Testament even decrees the death penalty for star worship

Still, the Bible does make a surprising number of references to *signs* in the heavens. Both Old and New Testaments assume that what happens up there matters. If we are interested in following the counsel of the Bible, we must hold a distinction in mind. Astrology assumes that stars are *causes* of earthly events. The Bible assumes that they can be *messages about* earthly events. It may be useful to think of this as a thermometer distinction. A thermometer can **tell** you if it's hot or cold, but it can't **make** you hot or cold. There is a big difference between a sign and an active agent. This is the difference between "astrology" and what the Bible holds forth.

Scholars believe that the *Book of Job* is the oldest Biblical text, likely originating before the time of Abraham and the founding of the Jewish nation. It's interesting, then, to find that this oldest book speaks of the stars and the constellations with respect. It states that God set them in place. And it references the same constellations we know today. Even considering ancient literature other than the Bible, it appears that the configurations of the constellations and what they represent may be older than the oldest surviving texts of any language.

In the *Book of Job*, Chapter 9, Job credits God with creation of the stars and constellations:

**9 He is the Maker of the Bear [Ursa Major] and Orion, the Pleiades and the constellations of the south.**

And in *Job* Chapter 38, God makes much the same point. He, not man, is sovereign over the creation, particularly the constellations:

**31 "Can you bind the beautiful Pleiades? Can you loose the cords of Orion? 32 Can you bring forth the constellations in their seasons...**

Many other Biblical writers in many other passages state that God arranged the stars. For example, says the *Book of Isaiah* in Chapter 40:

**26 Lift your eyes and look to the heavens: Who created all these? He who brings out the starry host one by one, and calls them each by name. Because of his great power and mighty strength, not one of them is missing.**

Several striking passages on this issue were written by David, son of Jesse. David is a towering Biblical figure. A fierce warrior, a revered king who was himself deeply reverent. Highly intelligent and wonderfully poetic, he wrote much of the *Book of Psalms* and some of the most beautiful passages of scripture. Among these is Psalm 19, where David extols God's handiwork in the stars. But he doesn't only extol, he tells us that the stars bear a *message*. Watch his choice of verbs [emphasis added]:

**1 ...The heavens *declare* the glory of God; the skies *proclaim* the work of his hands. 2 Day after day they *pour forth speech*; night after night they *display knowledge*. 3 There is no speech or language where their voice is not heard. 4 Their *voice goes out* into all the earth, their words to the ends of the world...**

David chose verb after verb which says that the stars *communicate*. An intriguing passage. But isn't it just poetry? Isn't David just speaking with a poet's elegant symbolism?

The apostle Paul didn't think so.

In The *Book of Romans*, Chapter 10, Paul is addressing the question: had the Jews of Christ's day heard that Messiah had come? He answers the question by saying that *of course* they had heard. He then quotes David to make his point!

**17 Consequently, faith comes from hearing the message, and the message is heard through the word of Christ. 18 But I ask: Did they [the Jews] not hear? Of course they did: "Their voice has gone out into all the earth, their words to the ends of the world."**

Note the structure of Paul's argument. Paul is taking the position that something has happened in the stars which indicated to the Jews of his time that the Messiah had come. As we shall see, the apostle Peter elsewhere forcefully makes the same argument. Of course, this argument has exactly *no* force unless something had happened in the stars. The fact that both men employed this line of reasoning shows they are making the same assumption. *They assumed that their listeners were aware of celestial phenomena associated with Christ*. It's our quest to determine what those phenomena were.

For those who revere the Bible, we've probably seen enough to set us at ease about looking for meaning in the stars. We're not doing something that the Bible condemns. Just the opposite. But there is one more authority who can put the most devout Christian at ease about looking up after dark. Jesus himself. In the *Book of Luke*, Chapter 21, Jesus tells us:

**25 "There will be signs in the sun, moon and stars..."**

So, it is Biblically legitimate to look for signs in the stars, but always remembering the thermometer distinction. The *Book of Deuteronomy* warns at Chapter 4:

**19 ...when you look up to the sky and see the sun, the moon and the stars--all the heavenly array--do not be enticed into bowing down to them and worshipping things the LORD your God has apportioned to all the nations under heaven.**

At numerous times in Biblical history, the Jewish nation ignored this warning. Rather than looking to the stars for signs, they slipped over the forbidden line into assuming the stars influenced human affairs. They began to worship created things instead of the Creator. In the *Second Book of Kings*, Chapter 23, we find King Josiah leading a revival of spirituality among the Jews and a return to worship of God alone. One of the things Josiah had to do was clear out astrological objects which had been brought in to the very temple itself:

**4 [Josiah] ordered Hilkiah the high priest, the priests next in rank and the doorkeepers to remove from the temple of the LORD all the articles made for...all the starry hosts. He burned them outside Jerusalem...**

The bottom line on the Bible and the stars: we may look to the stars for signs from God, but we are not to revere the stars themselves.

### ► The Nine Points of Christ's Star

We're now ready to examine the qualifications for the Star. Working from the Biblical account in *Matthew*, unpacking it verse by verse, we can compile a list of nine qualities which must be present before any celestial phenomena could be considered to be the Biblical Star of Bethlehem. If any qualification is missing, then we will assume we haven't found our Star. All of the following verses come from the *Gospel of Matthew* Chapter 2.

**1 After Jesus was born in Bethlehem in Judea, during the time of King Herod,**

To begin, we see again how important the date of Herod's death is to the investigation. If Herod died in 4 BC, then Christ had to be born before that year. But if Herod died in 1 BC, as the best evidence indicates, then we should look at the years 2 and 3 BC.

**1 (cont'd) Magi from the east came to Jerusalem**

Who are these magi? The word, 'magi,' which is sometimes translated 'wise men,' is the root from which we get our word 'magic.' This doesn't make them all magicians, in the present sense of the word. Some of them were learned men in general, who studied the physical world and were knowledgeable about many things, including the stars. Magi were often court astronomers who were consulted by the rulers of the day for guidance in affairs of state. This was also true in much earlier times. For example, during the Babylonian captivity of the Jews, some 500 years earlier, King Nebuchadnezzar kept a stable of court magi. Nebuchadnezzar made the Jewish prophet Daniel Chief Magus of his court when Daniel was able to interpret a dream the other magi could not.

There were magi of various schools, and some were more respected than others. We know something of a particularly prestigious school of magi from the writings of Philo. Philo was a Jewish philosopher and contemporary of Jesus who lived in the large Jewish community of Alexandria, Egypt. Philo wrote in praise of an Eastern school of magi and their great learning and understanding of the natural world. This school may have descended from the Babylonian magi of Daniel's day. Matthew does report that the Wise Men were from the East, and Babylon is east of Judea. It was at one time part of the Persian Empire, which ties in with Philo. So it is possible the Wise Men were of this prestigious Eastern school. This would account for Herod giving them an audience, and for his strong reaction to the news they brought.

## **2 and asked, "Where is the one who has been born king of the Jews?"**

The Magis' question gives us three points for our list of qualifications for the Star. Whatever happened in the sky indicated 1) birth, 2) kingship and 3) Jews. It also gives us a clue about the Magi. They were interested in things Jewish.

## **2 (cont'd) We saw his star in the east and have come to worship him."**

When the wise men said "we saw his star in the east," they didn't mean "we saw his star while we were in the East." The Greek text here says the Star was "en anatole," meaning they saw his star rising in the east. That's what all but polar stars do, because of the rotation of the Earth. Stars rise in the east, but not all celestial objects do that. So, that's another qualification for the Star: 4) it must rise in the east like most other stars.

The motive of the Magi in coming to Jerusalem tells us a great deal more about them. They wanted to worship a Jewish king. It can't be proven from the text, but it is quite possible that some of the Magi were of Jewish descent, perhaps a Jewish remnant from Daniel's day. This would help explain why a Jewish philosopher, Philo, would admire them, why they were watching the sky for things Jewish, why they wanted to worship a Jewish king, and why they were taken so seriously by Herod and Jewish chief priests. If they were not Jews, then they must have been most impressive magi indeed, as Jews of the time were deeply disdainful of pagans and their beliefs.

## **3 When King Herod heard this he was disturbed, and all Jerusalem with him.**

You must know more to understand just how very troubled Herod and Jerusalem became at the Magis' news. Historians tell us that respect for the stars and guidance derived from them was at a peak. Both ancient historians and the Bible make it clear that the Jews of this period expected a

new Jewish ruler to arise, based upon Jewish prophecy. And it was accepted that the stars could announce such an arrival.

For example, about 60 years earlier, in 63 BC, magi made a presentation to the Roman Senate. They described celestial portents indicating that a new ruler had been born. Evidently regretting that news, the Senate responded by ordering the death of baby boys in the candidate age range. Sound familiar? It turns out that when Herod ordered the slaughter of children in Bethlehem he may have been following a sort of Roman precedent. That precedent may be one reason Jerusalem was troubled at the news the Wise Men brought. Perhaps they realized the Romans might shed blood in response.

**4 When he had called together all the people's chief priests and teachers of the law, he asked them where the Christ was to be born. 5 "In Bethlehem in Judea," they replied, "for this is what the prophet has written: 6 "'But you, Bethlehem, in the land of Judah, are by no means least among the rulers of Judah; for out of you will come a ruler who will be the shepherd of my people Israel.'"**

Herod took the Magis' message as factual, and consulted the Jewish experts about the location of the birth. The fateful verse in *the Book of Micah* which is quoted to Herod by the Jewish experts soon resulted in the death of many little boys in Bethlehem.

**7 Then Herod called the Magi secretly and found out from them the exact time the star had appeared.**

Another qualification for the Star: 5) It appeared at an exact time. And yet another qualification: 6) Herod didn't know when it appeared. He had to ask.

**8 He sent them to Bethlehem and said, "Go and make a careful search for the child. As soon as you find him, report to me, so that I too may go and worship him." 9 After they had heard the king, they went on their way, and the star they had seen in the east went ahead of them until it stopped over the place where the child was.**

And now we have the last three qualifications for the Star: 7) it endured over a considerable period of time. The Magi saw it, perhaps from Babylon, traveled to Judea and saw it still. 8) It went ahead of them as they traveled from Jerusalem to Bethlehem. You might not realize that this doesn't mean the Star was needed to guide the travelers to Bethlehem. Bethlehem was (and is) just five miles south of Jerusalem on the main road. They couldn't miss it. No, the Star appears ahead of them as they trek south not so much as a guide as a further confirmation of the signs they had seen. Lastly, 9) the Star stopped! Can a star do that? Yes, it can, as we shall see.

### ► **What was the Star?**

We now know much about the Star.

1. It signified birth.
2. It signified kingship.
3. It had a connection with the Jewish nation.



4. It rose in the east, like other stars.
5. It appeared at a precise time.
6. Herod didn't know when it appeared.
7. It endured over time.
8. It was ahead of the Magi as they went south from Jerusalem to Bethlehem.
9. It stopped over Bethlehem.

Knowing these qualifications, we are in a position to **disqualify** most astronomical phenomena as being the Star. Remember that if any of the nine Biblical features of the Star is absent, then the phenomenon we are examining may be interesting, but isn't likely the Biblical Star.



Meteor

**A meteor?** A meteor is a small fragment of material or even celestial dust which enters Earth's atmosphere at great speed glowing brightly as its outer layers vaporize. While often a physically small thing, a "shooting star" can be beautiful viewed from Earth and could be a dramatic means of making an announcement in the heavens. But such a sign would fail most of the nine tests. Most obvious is the fact that shooting stars don't rise in the east like other stars, they do "shoot" across the sky. Because they display suddenly, only once and for mere moments as they

burn up in the Earth's atmosphere, it is not obvious how the Magi could form associations with kingship, birth, the Jews, the Messiah's birthplace and all. And meteors don't endure long enough to satisfy the Biblical criteria. The Star was very likely not a meteor.

**Perhaps a comet?** A comet is an object which has a very large orbit about the Sun, an orbit of many years duration. You may be familiar with Halley's Comet. Halley's, like many comets, is a block of ice, in Halley's case a few miles across. It orbits the Sun in a 75.5 year circuit, and like all comets, it is easily tracked using Kepler's equations. Comets do rise in the east and endure over time. But there are several problems with the comet hypothesis.



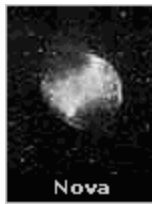
Comet

The first problem is sociological. At this time in history (and all the way into the middle ages), comets were regarded as omens of doom and destruction, the very opposite of good tidings. This was in part because of comet behavior. They were perceived in ancient times to break into the sky ignoring the highly ordered and repetitive clockwork movement of the heavens. The Almighty could have chosen to use an ominous sign for the birth of Christ. Presumably, He can do whatever He likes. But if the purpose of the Star was to *communicate something joyful* to man, a comet seems an unlikely choice.

A bigger problem is that there do not appear to have been any comets in 3 or 2 BC. Several civilizations maintained records of such phenomena, notably the Chinese. These records have been preserved to the present day, and no comets are recorded for these years.

Finally, comets are obvious things. Anyone could and would have seen a comet. Herod would not have needed to ask the Magi when such a thing appeared. The Biblical Star was very likely not a comet.

**What about a nova?** A nova is an exploding star. A nova appears suddenly at a point in time, endures over time, rises in the east like other stars and can be spectacular. However, none appears in the ancient records for this time period.



And like comets, a nova is an obvious thing. Many of us have been to locations, such as high mountains or the desert, far from modern artificial light (which astronomers call "light pollution"). We marvel at how clearly the heavens can be seen under such conditions. Unless weather interfered, Jerusalem was like that every night, and common people were far more familiar than are we with the appearance of the night sky. If a nova suddenly appeared, almost everyone would know about it.

Herod would not have had to ask the Magi when it appeared. If the Star was a real astronomical event, it was very likely not a nova.

**What's left?** If the Star wasn't one of the spectacular astronomical objects we've examined, what's left? Biblical qualification 6—that Herod had to ask when the Star appeared is a powerful clue. Anyone can glance up and see planets and stars. That is the nature of things in the sky. But, apparently, one could look up at the Star without realizing it. Herod didn't know of it. It took magi to explain it. But once the Star was pointed out, all Jerusalem went abuzz, and Herod jumped into murderous action. A reasonable hypothesis is that *the Star must have been something in the normal night sky which was striking when explained.*

Did anything interesting happen in the ordinary night skies over the Middle East in 3 or 2 BC?

Yes, indeed.